Implementing Wireless Evaluation In
A Hospital Based OSCE Center

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To provide an effective and efficient means to gather assessment data during Objective Structured Clinical Examinations [OSCEs] and integrate the data into ANGEL, the Indiana University School of Medicine's [IUSM] curriculum management system, a wireless approach using PDAs was selected, configured and evaluated. Following a systems architecture and human-computer interface analysis of the project, a system with less functionality but greater reliability was designed and implemented.

BACKGROUND AND SIGNIFICANCE

OSCE Centers are becoming more prevalent in assessing medical education. IUSM implemented its OSCE Center in 1999 in a medical office building attached to Clarian Hospital. The Center contains fifteen stations or rooms in which students are presented with a clinical scenario involving a standardized patient. In the IUSM Center, students are required to respond to a brief set of questions about the patient encounter and the standardized patients similarly assess the students. This had been done using bubble sheets that were subsequently scanned, with a significant outlay in both personnel time and scanning costs.

AIMS

o   To improve the effectiveness and efficiency of data collection
o   To integrate the data into the IUSM curriculum management system

METHODS

A decision was made to move to a wireless system using PDAs. Based on a number of factors, including cost and ease of operation, the hardware selected was Handspring Visors with Xircom 802.11b Springboard wireless cards and a Linksys Router. Two power cradles were purchased for each room to support one Visor for the standardized patient and one visor for the student. The school's curriculum management system, ANGEL, has sophisticated assessment tools and a wireless Web interface. To address the integration issue, the evaluation forms were created within the Angel framework and downloaded to the Visors, with the answers uploaded into the ANGEL server. A pilot study was conducted before any of the critical OSCE exams were to be given. Evaluation of the project centered on technology reliability and usability.

RESULTS

Several issues became immediately apparent. First, there were consistent problems connecting to the ANGEL server. After ruling out possible interference from microwave and other medical technology equipment in the building as well as the load being carried by the Linksys router, the problem was found to be in the battery life of the Xircom 802.11b Springboard wireless cards and the weakness of the signal at half life.

Another major issue was the need to log on and go through several ANGEL authentication screens before the test page appeared. While most students could do this without effort, some became confused from the onset and more had difficulties if there was a need to restart the wireless connection. Time issues are paramount in exam situations. Because of the usability issues, the implementation was delayed.

The need still existed to move to a wireless environment, however, the original system configuration was extremely problematic. A compromise was reached which involved the use of two routers, a Cisco wireless access point to provide wireless connectivity and the Linksys four-port switch to provide DHCP services. Rather than using the enterprise ANGEL, an intranet was created with a Dell GX1 workstation to provide web services.

CONCLUSION

The first aim, to improve the effectiveness and efficiency of data collection, has been met. There is not seamless data integration within the ANGEL environment, but the report functions can still be used with a flat file transfer. When wireless PDA technology becomes more mature, the full integration will become a viable option.